UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

OH6866005635
#9

DATE: February 26, 1986

SUBJECT: Federal Facilities Inspection-NASA Lewis Research Center, Cleveland, Ohio - Ohio EPA Air Permit #1318001169 (A21589)

FROM: Arthur S. Gedeon, Environmental Scientist
THRU: A.R. Winklhofer, Chief, EDO

TO: Engineering Section, 5AC
ATTN: Hattie Geisler

During October 1985, two separate requests (numbers 4-421 and 4C-245) were received from the Air Compliance Branch to perform comprehensive air inspections at selected federal facilities. Such an inspection was done at the NASA Lewis Research Center in Cleveland, Ohio on January 31, 1986. Air permit information was attained from Mr. Walt Meyers of the Cleveland Division of Air Pollution Control prior to our inspection. A print out of the January 4, 1986, Ohio EPA air permit microfiche for the NASA facility is attached for your information (Attachment 1). Ms. Amy L. Bower, Industrial Hygienist and Mr. David Kuivinen, Head of the Chemical Analysis Section for NASA, accompanied me during the inspection. A map of the facility is enclosed. Both Mr. Meyers, Inspector for the Cleveland Division of Air Pollution Control and Dr. Julian M. Earle, Division Chief of NASA's Health, Safety, and Security Division expressed an interest in obtaining a copy of our inspection report.

The main finding of our inspection is that the NASA Lewis Research Center is not a significant source of air pollution. Coal-fired boilers which were used in the past to generate heat and steam have not been used for a number years. In fact, the permit status of two coal-fired boilers have been withdrawn and the boilers are currently inoperable.

The inspection obtained information in the following areas:

1) Permitted Sources

   a) coal, gas, and oil fired boilers
   b) paint spray booths
   c) vapor degreasers
   d) incinerator
   e) various processes

2) Other Sources

   a) petroleum storage tanks
   b) auto emission controls
   c) fugitive sources
   d) NESHAPs regulated substances
   e) pesticide application

A discussion of these sources follows.

11/13/86

PERMITTED SOURCES

Boilers

Both coal-fired boilers (B001 and B002) were inspected and found to be inoperable. NASA no longer plans to burn coal, even in an extreme emergency, to generate heat and steam. Only natural gas and fuel oil are being burned in the remaining boilers.

Three other operating boilers (B003, B004, and B005) were inspected. No noticeable sources of visible emissions were observed coming from any of the boiler stacks during the inspections.

The rated input capacities of NASA's thirteen boilers are shown below:

Boiler #	Source #	Fuel Burned	Input Capacity 10^6 BTU/ hr
* 1	B001	Coal	45.4
* 2	B002	Coal	45.4
3	B003	Gas/Oil	28.123
4	B004	Gas/Oil	50.212
5	B005	Gas/Oil	90.0
6	B006	Gas/Oil	12.6
7	B007	Gas	4.185
10	B008	Gas/Oil	5.821
9	B009	Gas/Oil	5.821
8	B010	Gas/Oil	5.821
11	B011	Gas	2.511
12	B012	Gas	2.5
13	B013	Gas	0.825

* Coal-fired boilers are inoperable and no longer used to generate heat and steam.

Allowable emission rates (EL) in pounds of SO_2 per million BTU actual heat input for fossil fuel plants between 10.0 and 350×10^6 BTU's per hour was calculated using the formula:

$EL = 7.014\ Q_m^{-0.314}$ - where Q_m is the total rated capacity of heat input in million BTU per hour.

For boiler #6 where Q_m is 12.6 and boiler #5 where Q_m is 90, the allowable emission rate for SO_2 is 3.44 and 1.85 pounds per million BTUs respectively. The actual SO_2 rate calculated for #2 fuel oil used by NASA is 0.259 pounds SO_2/MBTU (Attachment 2). SO_2 emissions are well within allowable limits.

Paint Spray Booths

All three paint spray booths are controlled by a water wash wall. Although large in size, 33' to 40' long, they are not a significant source of VOCs due to their limited use and adequate water wall control.

Degreasers

Two of the five degreasers were inspected - L001 and L006. Both are vapor degreasers which are kept covered and ventillated while in use. Actually, L006 was just being installed to replace L003 and was not yet operable. The four vapor and one cold degreaser employ 1,1,1 - trichloroethane and are not a significant source of VOCs.

Incinerator

The incinerator is used to burn paper at a maximum rate of 95 pounds per hour. It is used several times a week to destroy confidential documents. The incinerator is not considered a significant source of air pollution. It was not being used on the day of our inspection.

Process Equipment

The city of Cleveland is currently working with NASA personnel on identifying the number of process type permits which should be issued to the facility. The items being considered for permitting include: engine and combustion testing items, natural gas air drying burners, various woodworking equipment, and mobile component cleaning facility. None of the process equipment is a significant source of air pollution.

OTHER SOURCES

Petroleum Storage Tanks

A listing of petroleum storage sites is attached (Attachment 3). The facility has a total storage capacity of 461,255 gallons with the largest tank having a capacity of 30,000 gallons. About one-third of the tanks are above ground storage. All tanks are vented. According to Ohio Administrative Code (040-3745-21) section (L)(2)(a), fixed roof tanks with a capacity of less than 40,000 gallons do not require vapor control equipment.

Auto Emission Controls

NASA services all their government vehicles on site. Unleaded gasoline is used for all cars, while regular gasoline (leaded) is used for most of the older model trucks. Catalytic converters are replaced if needed. No converters are ever removed. Vehicles are emission tested every six months with the verification of testing placed in the operating packet of the car.

Fugitive Sources

Possible sources of fugitive emissions includes a coal pile, unpaved roadways, and temporary construction projects requiring earth moving. The coal pile is under ten feet high and several years old. NASA plans to remove the pile in the near future since coal is no longer burned at the facility. The unpaved roadways receive little traffic and occur in equipment storage areas. NASA has a road reconstruction project occurring at the main entrance to the facility. The project should be completed long before the summer fugitive season. Such road projects can be kept relatively fugitive free with good housekeeping practices.

NESHAPs Regulated Substances

NASA has several asbestos removal projects presently taking place. Asbestos is being removed from around piping, boilers, and from ceilings. All removal is done by contractors who have obtained removal permits from the city. Contractors are required to monitor before, during and after removal. NASA may also perform their own testing at any time during removal. The projects viewed during our inspection appeared to be done using approved asbestos removal, bagging, and disposal procedures. NASA plans to remove or encapsulate all asbestos at the facility. NASA's Environmental Health Branch constantly monitors and tests areas known to contain asbestos. Ambient asbestos levels do not pose any health risks to the employees.

Two test chambers in the Electric Propulsion Laboratory (EPL), Building #301, are contaminated with mercury as a result of testing ion propulsion engines. Ionized mercury has bonded or is intimately connected with the interior structure of the large walk-in test vessels. Conventional methods of decontamination do not apply since the mercury is removed from the metal surfaces only when a high vacuum is applied inside the test chambers. The chambers are no longer used and remain sealed. Responsible officials at the EPL are investigating means of mercury removal and seeking adequate funding for the removal project. The contaminated vessels does not now pose a danger to the environment or the employees.

Some radioactive compounds are present in the Materials and Structures Labs (Building #49). In cooperation with the Cleveland Clinic, NASA conducts radioactive cancer therapy. The use of these radioactive materials should not be a danger to the environment.

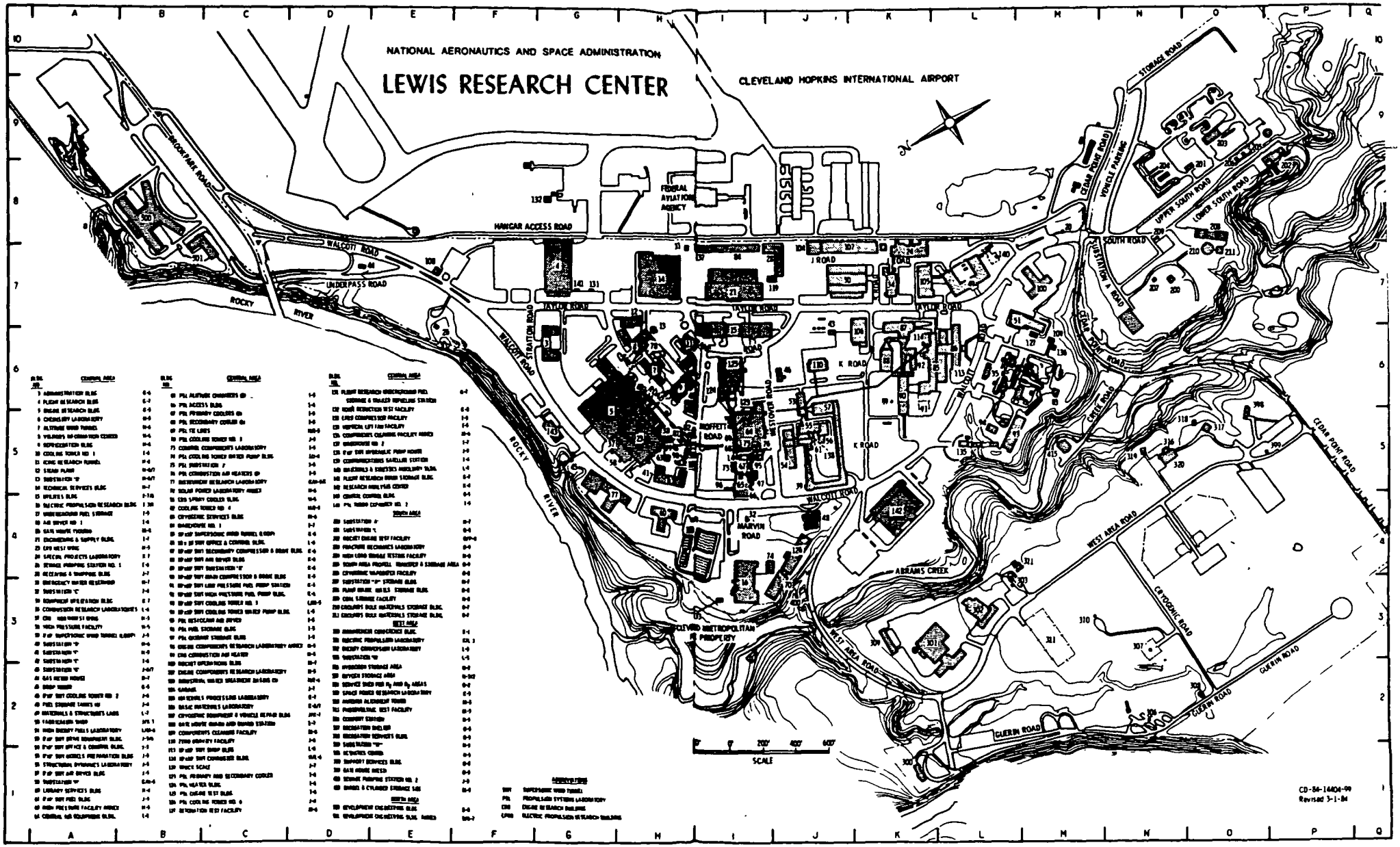
Pesticide Application

Attached (Attachment 4) is the 1986 pesticide application program to be used at NASA. Pesticide applications are performed by contract personnel certified and licensed by the State of Ohio. Pesticide dilution rates and methods of application are as specified by the manufacturer.

If there are any questions concerning this inspection report, please contact Art Gedeon at FTS 942-7250.

Attachments

cc: William Franz

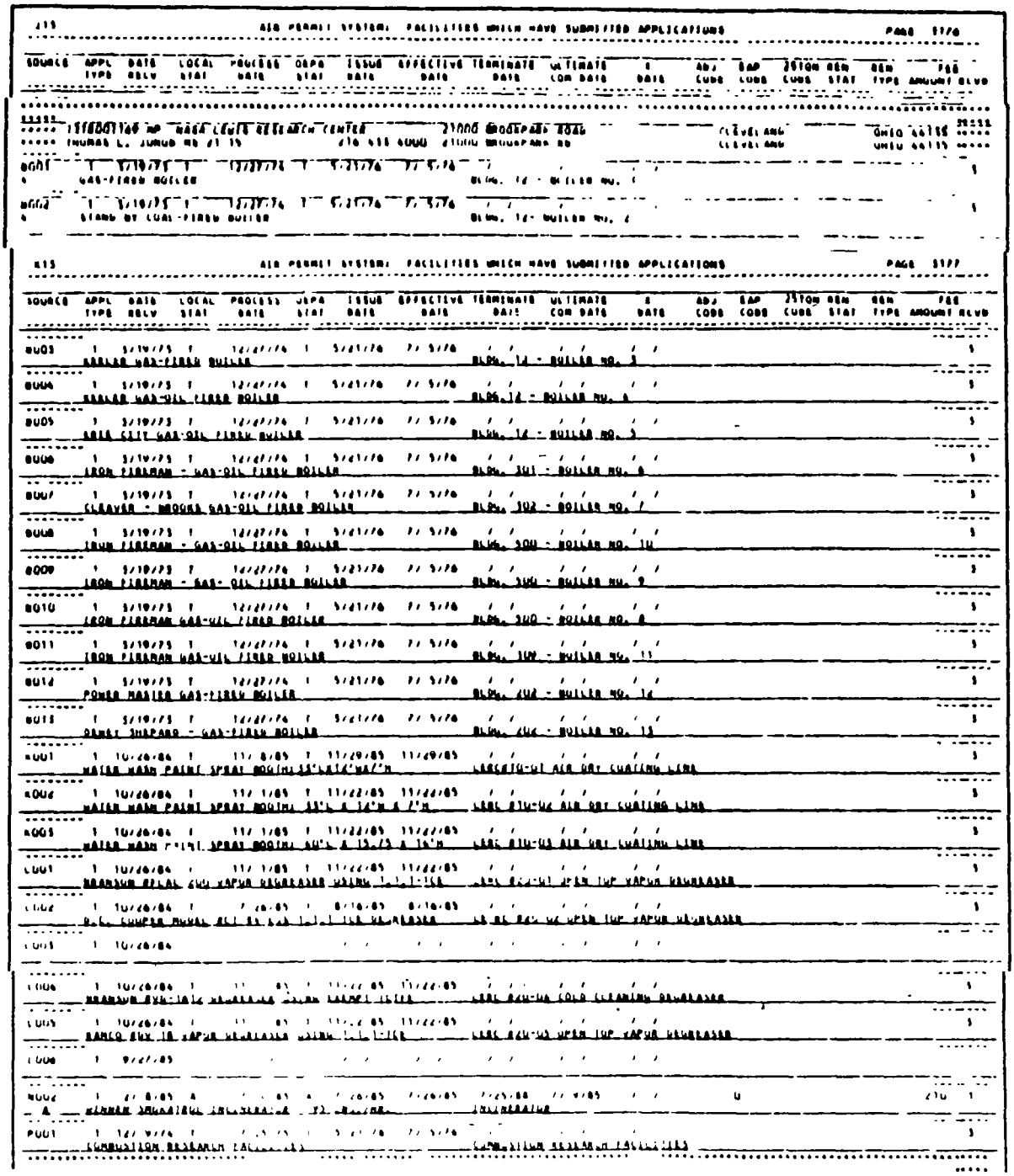

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LEWIS RESEARCH CENTER
CLEVELAND HOPKINS INTERNATIONAL AIRPORT
BROOKPARK ROAD
WALCOTT ROAD
UNDERPASS ROAD
ROCKY RIVER
HANGAR ACCESS ROAD
FEDERAL AVIATION AGENCY
TAYLOR ROAD
J ROAD
K ROAD
WALCOTT STATION ROAD
MOFFETT ROAD
WESTERVILLE ROAD
MARVIN ROAD
ABRAMS CREEK
WEST AREA ROAD
CRYOGENIC ROAD
GUERIN ROAD
CEDAR POINT ROAD
SOUTH ROAD
STORAGE ROAD
VEHICLE PARKING
UPPER SOUTH ROAD
LOWER SOUTH ROAD
SUBSTATION A ROAD
CIRCLE ROAD
SCALE
CD-84-14404-09
Revised 3-1-84

(Attachment 1.)

Permitted Air Sources

NASA Lewis Research Center
21000 Brookpark Road
Cleveland, Ohio

OEPA Permit # 1318001169



(Attachment 2)

OHIO SO_2 REGULATION COMPLIANCE CHECK

DATE 2-24-86

FACILITY NAME NASA LEWIS RESEARCH CENTER

ADDRESS 21000 BROOKPARK ROAD

CLEVELAND	CUYAHOGA	OHIO
CITY	COUNTY	STATE

COMPANY OFFICIAL AMY BOWER

SOURCE INFORMATION

BOILER HEAT INPUT CAPACITY (RATED - MBTU/HR) ______

CONTROL EQUIPMENT OR PROCEDURES PARTICULATE NONE } ON GAS/OIL-FIRED BOILERS
SO_2 NONE }

DESIGN EFFICIENCY OF CONTROLS UNKNOWN

OPERATING EFFICIENCY OF CONTROLS (Tested) UNKNOWN

FUELS INFORMATION

(134,871 BTU/GAL)

HEATING VALUE (BTU/LB or GAL) 19,032 BTU/# % SULFUR 0.24%

DATE OF FUEL ANALYSIS SHOWING THE ABOVE UNKNOWN

TYPICAL FREQUENCY OF FUEL ANALYSIS UNKNOWN

COMPUTATIONS

Coal (NOT USED)

$\frac{10^6}{\_\_\_\_ \text{ BTU/LB}}$ X 0.019 X ____ %S = ______ lbs. SO_2 / MBTU

Oil

$\frac{10^6}{134{,}871 \text{ BTU/GAL}}$ X 7.264 LB/GAL X 0.02 X 0.24 %S = 0.259 lbs. SO_2 / MBTU

Oil weights - #1 - 7.00; #2 - 7.34; #5 - 7.76; #6 - 8.09 lbs./gallon

STATUTORY LIMITATION 1.85-3.44 lbs. SO_2 / MBTU

1.85 for 90x10⁶ BTU boiler; 3.44 for 12.6x10⁶ BTU boiler

X In compliance

____ Not in complianc

INSPECTOR'S NAME Arthur S. [signature]

Table II - Part I (Cleveland)
Oil Storage Sites Subject to This SPCC Plan

All oil storage units subject to the SPCC Plan Regulations - 40 CFR, Part 112, March 26, 1976.

all are vented

	Oil Storage Units						
	Item No.	Number	Unit Capacity (gallons)	Total Capacity (gallons)	Building Number and Site	Storage Unit Above Ground or Buried	Dikes
	19				Bldg. 5 - Engine Research Bldg.		
	jet fuel	1	1,000	1,000	Trailer	Above	Yes
	diesel	1	1,000	1,000	Tank	Above	Yes
	special oils	1	300	300	Tank	Above	Yes
		8	55	440	Drums	Above	Yes
X	20				Bldg. 12 - Steam Plant		
	fuel oil	2	30,000	60,000	Tanks	Buried	N/A
*	21				Bldg. 17 - Underground Fuel Storage		
	JP-4	6	25,000	150,000	Tanks	Buried	N/A
*	22				Bldg. 24 - Special Projects Lab		
	JP-4	1	6,000	6,000	Tank	Buried	Yes
*	23				Bldg. 35 - Rocket Laboratory		
	JP-4	1	1,000	1,000	Tank	Above	Yes
	diesel	1	80	80	Tank	Above	Yes
		1	200	200	Tank	Above	Yes
	24				Bldg. 38 - ERB-SW Wing Extension		
	oil	2	2,000	4,000	Tanks	Above	Yes
*	25				Bldg. 48 - Wiggins Tank Farm		
	JP-4	4	25,000	100,000	Tanks	Above	Yes
	26				Bldg. 53 - 8x6 SWT Drive Equipment		
	turbine oil	3	800	2,400	Tanks	Internal	Yes
		1	500	500	Tank	Lubrication	Yes
		3	55	165	Drums	System*	Yes

(Continued)

Table II - Part I (Cleveland) - Continued

Item No.	Oil Storage Units Number	Unit Capacity (gallons)	Total Capacity (gallons)	Building Number and Site	Storage Unit Above Ground or Buried	Dikes
27				Bldg. 64 - PSL Equipment		
	2	2,000	4,000	Tanks	Internal	Yes
	1	10,000	10,000	Tank	Lubrication System*	Yes
28				Bldg. 85 - 10x10 SWT Loop		
	2	1,210	2,420	Tanks	Internal	Yes
	1	150	150	Tank	Hydraulic Oil System*	Yes
29				Bldg. 87 - 10x10 SWT Secondary Compressor & Drive	Internal	
	3	1,000	3,000	Tanks	Lubrication	Yes
	1	800	800	Tank	System*	Yes
30				Bldg. 90 - 10x10 SWT Main Compressor & Drive		
	4	1,000	4,000	Tanks	Internal	Yes
	1	800	800	Tank	Lubrication	Yes
	1	500	500	Tank	System*	Yes
31				Bldg. 91 - 10x10 SWT Low Pressure Fuel Pumping Station		
	3	5,000	15,000	Trailers	Above	Yes
	1	2,500	2,500	Trailer	Above	Yes
32				Bldg. 104 - Garage		
	1	2,000	2,000	Tank	Buried	N/A
	2	6,000	12,000	Tanks	Buried	N/A
33				Bldg. 114 - 10x10 Exhauster		
	1	1,000	1,000	Tank	Buried	N/A
34				Building 124 - PSL Heater		
	3	5,000	15,000	Trailers	Above	Yes

(Continued)

Table II - Part I (Cleveland) - Continued

Item No.	Oil Storage Units: Number	Unit Capacity (gallons)	Total Capacity (gallons)	Building Number and Site	Storage Unit Above Ground or Buried	Dikes
* 35 JP-4	2	10,000	20,000	Bldg. 131 - Flight Research Fuel Storage Tanks	Buried	N/A
* 36 jet A	1	10,000	10,000	Bldg. 132 - Noise Reduction Test Facility Tank	Buried	N/A
* 37 jet A	1	10,000	10,000	Bldg. 135 - Vertical Lift Fan Facility Tank	Buried	N/A
38 oil gas misc. product	200	55	11,000	Bldg. 415 - Barrel & Cylinder Storage Drums	Above	Yes
39 fuel oil	1	10,000	10,000	Bldg. 500 - Development Engineering Tank	Buried	N/A

National Aeronautics and
Space Administration

Lewis Research Center
Cleveland, Ohio
44135

(Attachment 4)

NASA

Reply to Attn of. 7331

January 7, 1986

TO: 1600/Chief, Environmental Health Office

FROM: 7331/Pesticides Program Monitor

SUBJECT: Pesticides to be Used at Lewis Research Center During 1986

Attached is a listing of pesticides to be used at Lewis, during the calendar year 1986.

Alexander Mackie

Alexander Mackie
Facilities and Grounds Maintenance Section

2 Enclosures

cc:
7330/A. Szuhai
7331/D. Logue
7331/A. Mackie
7330/File

7331/AMackie:ejb:1/8/86:1203Q

CONCURRENCE:

DWL

DWN

ABS

File 10.16

IAN 10

CHEMICAL NAME	COMMON OR TRADE NAME	% ACTIVE INGRED. AND FORMULATION	TARGET PEST	SITE DESCRIPTION
2,2-DIS (P-Methoxyphenyl)-1,1,1-Trchloroethane	Methoxychlor	50% Emulsion Concentrate	Mosquito Control	Recreational Areas
Petroleum Oil	Volok (Dormant Oil Spray)	70% Visocity	Scale Control	Pin Oak Trees
Copper Sulphate Monohydrate	Copper Sulphate	35% Basic Metallic Copper	Cytospora Canker	Blue Spruce Trees
2-(1-Methoxylethoxy) Phenol Methylcarbamate	Bagon	13.9% Emulsifiable Concentrate	Roaches & Ants	In-house Insect Control
Benomyl	Benlate	50% Wettable Powder	Blackspot, Rust and Mildew	Ornamental Trees and Scrubs
Benomyl	Tersan 1991	50% Wettable Powder	Fasarium, Brown Patch, etc.	Lawn Areas
N-Alkyl Dimethyl Benzyl Ammonium Chlorides Plus BIS (Tri-n-butyltin) oxide	Gamlen Gamacide Formula 1825	6.93% Solution	Slime and Algae	Open System Cooling Towers
O,O-Diethyl O-(2-Isopropyl-4-Methyl-6-Primidinyl) Phosphorothrote	Diazinon 500AG	48% Emulsifable Concentrate	Aphids	Ornamental Trees and Scrubs
Carbaryl 1-Napthyl N-Methylcarbamate	Seven	50% Concentrate	Tent Caterpillars	Ornamental Trees
1-Methylenl 2-[[ethoxy[(1-Methylethyl)amino] Phosphinothioyl]oxy] benzoate	Oftanol	5% Granular	Lawn Grubs	Lawn Areas
4,4-Dichloro-alpha-trichloro Methylbenzhydrol	Kethane (Dicofol)	18.5% Emulsifable Concentrate	Spider Mites	Lawn Areas
N-(1-Etylpropyl)-3,4-Dimenthyl-2.6-Di-Nitrobenze-Namine	Pre-M-Lesco 60-DG (Pendimethalin)	60% Granular	Crabgrass	Lawn Areas

CHEMICAL NAME	COMMON OR TRADE NAME	% ACTIVE INGRED. AND FORMULATION	TARGET PEST	SITE DESCRIPTION
Diethanolamine Salt of 2,4 Dichlorphenoxyacetic Acid 2,4-D, and Diethanolamine Salt of 2-(4-Chloro-2-Methelphonoxy) Proponic Acid (MCPP).	2,4-D Pluss MCPP	31% MCPP, 15.35% 2,4-D Emulsifable Concentrate	Broadleaf Weeds	Lawn Areas
Isopropylamine Salt of N-(Phosphonomethyl) Glycine	(ANSI, WSSA) Round-up	41% Wettable Solution	Noxious Weeds	Storage Sites, Etc.
Diplacinone [2(Diphenylacelyl)-1,3-Indanedione] and Sodium Salt	Eatons All Weather Bait	0.0052% Bait Blocks	Rodents	Indoors and Outdoors
Tetrachlotoethylenel Trichlotomonofluoromethane. Dichlotodifluoromethane. Petroleum Distillate. Methylene Chloride. Pine Oil Rotenone, other related Resins plus Pyrethrins 1 and 11	Wasp Killer Aerosol Spray	100% Emulsifable Concentrate	Wasps and Hornets	Exterior and Interior of Buildings
O,O-Diethylo-(2-Isopropyl-G-Methyl-4-Pyrimidinyl) Phosphorothioate	Diazinon 4E	47.5% Emulsifable Concentrate	Ants and Roaches	Interior of Buildings

NOTE: Pesticide applications are performed by contract personnel certified and licensed by the State of Ohio on pesticide control. They are monitored by NASA personnel licensed by the State of Ohio. Dilution rates and methods of application are as specified by the manufacturer.

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION V

EASTERN DISTRICT OFFICE

STATE NOTIFICATION OF INSPECTION

Authority: ✓ SECTION 114(d)(1)-CLEAN AIR ACT, AS AMENDED

____CWA, ____TSCA, ____RCRA, ____SWDA

Source Name NASA LEWIS RESEARCH CENTER

Address 21000 BROOK PARK ROAD

City CLEVELAND

State OHIO

Person Notified MR. WALT MEYERS

Title INSPECTOR

Organization CLEVELAND DIVISION OF AIR POLLUTION CONTROL

Date of Notification 1-16-86

Planned Date of Inspection 1-31-86

Purpose of Inspection (compliance monitoring, Enforcement Division request etc.)

ENFORCEMENT DIVISION REQUEST

Scope COMPREHENSIVE AIR INSPECTION

Person Giving Notice Arthur S. Gedeon

Title Environmental Scientist

Organization U.S.EPA, Region V, Eastern District Office

Arthur S. Gedeon
(signature)

(A copy of this notification must accompany each Air inspection report). For all other types of inspections include with file copy of report.